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Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Cancelled)
2. (Currently Amended) The method of claim [1]4, wherein the higher-order statistics comprise second-order statistics of the propagation medium.
3. (Cancelled)
4. (Currently Amended) A method comprising:  
selecting a subset of active antennas from a plurality of available antennas in a multi-  
element antenna system based on higher-order statistics of a propagation medium; and  
selecting a constellation for transmission on the active antennas[The method of claim 3],  
where[in] said selecting the constellation for transmission on the active antennas comprises  
selecting different constellations for two or more of the active antennas.
5. (Currently Amended) The method of claim [1]4, where[in] the multi-element antenna system comprises a multiple-in multiple-out (MIMO) system.
6. (Currently Amended) The method of claim [1,]4, where[in] said selecting comprises selecting the subset of active antennas based on correlation matrices among the active antennas.

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7. (Currently Amended) A method comprising:  
selecting a subset of active antennas from a plurality of available antennas in a multi-  
element antenna system based on higher-order statistics of a propagation medium. [The method  
 of claim 1,] where[in] said selecting comprises selecting an optimum number of antennas to  
 maximize a minimum signal-to-noise ratio (SNR) margin.

8. (Currently amended) The method of claim [1]4, where[in] said selecting  
 comprises selecting the subset of active antennas based on a fixed data rate.

9. (Currently amended) [The method of claim 1, wherein] A method comprising:  
selecting a subset of active antennas from a plurality of available antennas in a multi-  
element antenna system based on higher-order statistics of a propagation medium where said  
 selecting comprises determining a subset including  $M_T$  active transmit antennas [by solving for]  
substantially in accordance with the equation

$$(M_T, p) = \arg \max_{(\tilde{M}_T, \tilde{p})} \frac{\lambda \min(R_T(\tilde{M}_T, \tilde{p}))}{\tilde{M}_T(2^{b_T/\tilde{M}_T} - 1)} \cdot \bar{\lambda}_{\min}(H_w^*(K_R, \tilde{M}_T)H_w(K_R, \tilde{M}_T)).$$

10. (Currently Amended) The method of claim [1]4, further comprising allocating  
 substantially equal power to each of said active antennas.

11. (Currently Amended) [The method of claim 1, wherein] A method comprising:  
selecting a subset of active antennas from a plurality of available antennas in a multi-  
element antenna system based on higher-order statistics of a propagation medium where said  
 selecting comprises determining a subset including  $M_T$  active transmit antennas [by solving for]

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substantially in accordance with the equation

$$(M_T, p) = \arg \max_{(M_T, \tilde{p})} \left\{ \frac{1}{\tilde{M}_T} \left[ \ln \det(R_T(\tilde{M}_T, \tilde{p})) + \sum_{j=1}^{\tilde{M}_T} \sum_{i=1}^{K_{R,j}} \frac{1}{i} - b_T \ln 2 \right] - \ln \tilde{M}_T \right\}.$$

12. (Cancelled)

13. (Currently Amended) The apparatus of claim [12]15, wherein the higher-order statistics comprise second-order statistics of the propagation medium.

14. (Cancelled)

15. (Currently Amended) An apparatus comprising:

a processor operative to select a subset of active antennas from a plurality of available antennas based on higher-order statistics of a propagation medium, wherein the processor is operative to select a constellation for transmission on the active antennas and [The apparatus of claim 14, where the processor is operative] to select different constellations for two or more of the active antennas.

16. (Currently Amended) The apparatus of claim [12]15, where[in] the apparatus comprises at least a portion of a multiple-in multiple-out (MIMO) device.

17. (Currently Amended) The apparatus of claim [12,]15 where[in] the processor is operative to select the subset of active antennas based on correlation matrices among the active antennas.

18. (Currently Amended) An apparatus comprising:

a processor operative to select a subset of active antennas from a plurality of available antennas based on higher-order statistics of a propagation medium where [The apparatus of

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claim 12,] the processor is operative to select an optimum number of antennas to maximize a minimum signal-to-noise ratio (SNR) margin.

19. (Currently Amended) The apparatus of claim [12]15, where the processor is operative to select the subset of active antennas based on a fixed data rate.

20. (Currently Amended) [The apparatus of claim 12] An apparatus comprising: a processor operative to select a subset of active antennas from a plurality of available antennas based on higher-order statistics of a propagation medium where the processor is operative to select a subset including  $M_T$  active transmit antennas [by solving for] substantially in accordance with the equation

$$(M_T, p) = \arg \max_{(\tilde{M}_T, \tilde{p})} \frac{\lambda \min(R_T(\tilde{M}_T, \tilde{p}))}{\tilde{M}_T (2^{b_T/\tilde{M}_T} - 1)} \cdot \bar{\lambda}_{\min}(H_w^*(K_R, \tilde{M}_T) H_w(K_R, \tilde{M}_T)).$$

21. (Currently Amended) The apparatus of claim [12,]15 where the processor is operative to allocate substantially equal power to each of said active antennas.

22. (Currently Amended) [The apparatus of claim 12,] An apparatus comprising: a processor operative to select a subset of active antennas from a plurality of available antennas based on higher-order statistics of a propagation medium where the processor is operative to select a subset including  $M_T$  active transmit antennas [by solving for] substantially in accordance with the equation

$$(M_T, p) = \arg \max_{(\tilde{M}_T, \tilde{p})} \left\{ \frac{1}{\tilde{M}_T} \left[ \ln \det(R_T(\tilde{M}_T, \tilde{p})) + \sum_{j=1}^{\tilde{M}_T} \sum_{i=1}^{K_R-j} \frac{1}{i} - b_T \ln 2 \right] - \ln \tilde{M}_T \right\}.$$

23. (Cancelled)

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24. (Currently Amended) The apparatus of claim [23]26, wherein the higher-order statistics comprise second-order statistics of the propagation medium.

25. (Cancelled)

26. (Currently Amended) An apparatus comprising:  
a processor including means for selecting a subset of active antennas from a plurality of available antennas based on higher-order statistics of a propagation medium and means for selecting a constellation for transmission on the active antennas including [The apparatus of claim 25, further comprising] means for selecting different constellations for two or more of the active antennas.

27. (Currently Amended) The apparatus of claim [23]26, where[in] the apparatus comprises at least a portion of a multiple-in multiple-out (MIMO) device.

28. (Currently Amended) The apparatus of claim [23,]26 further comprising means for selecting the subset of active antennas based on correlation matrices among the active antennas.

29. (Currently Amended) An apparatus comprising:  
a processor including means for selecting a subset of active antennas from a plurality of available antennas based on higher-order statistics of a propagation medium [The apparatus of claim 23], where[in] said selecting comprises selecting an optimum number of antennas to maximize a minimum signal-to-noise ratio (SNR) margin.

30. (Currently Amended) The apparatus of claim [23]26, further comprising means for selecting the subset of active antennas based on a fixed data rate.

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31. (Currently Amended) [The apparatus of claim 23, further comprising] An apparatus comprising:

a processor including means for selecting a subset of active antennas from a plurality of available antennas based on higher-order statistics of a propagation medium and means for determining a subset including  $M_T$  active transmit antennas [by solving for] substantially in accordance with the equation

$$(M_T, p) = \arg \max_{(\tilde{M}_T, \tilde{p})} \frac{\lambda \min(R_T(\tilde{M}_T, \tilde{p}))}{\tilde{M}_T (2^{b_T/\tilde{M}_T} - 1)} \cdot \bar{\lambda}_{\min}(H_w^*(K_R, \tilde{M}_T) H_w(K_R, \tilde{M}_T)).$$

32. (Currently Amended) The apparatus of claim [23]26, further comprising means for allocating substantially equal power to each of said active antennas.

33. (Currently Amended) [The apparatus of claim 23, further comprising] An apparatus comprising:

a processor including means for selecting a subset of active antennas from a plurality of available antennas based on higher-order statistics of a propagation medium and means for determining a subset including  $M_T$  active transmit antennas [by solving for] substantially in accordance with the equation

$$(M_T, p) = \arg \max_{(\tilde{M}_T, \tilde{p})} \left\{ \frac{1}{\tilde{M}_T} \left[ \ln \det(R_T(\tilde{M}_T, \tilde{p})) + \sum_{j=1}^{\tilde{M}_T} \sum_{i=1}^{K_R-j} \frac{1}{i} - b_T \ln 2 \right] - \ln \tilde{M}_T \right\}.$$

34. (Cancelled)

35. (Currently Amended) The method of claim [34]37, wherein the higher-order statistics comprise second-order statistics of the propagation medium.

36. (Cancelled)

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37. (Currently Amended) A system comprising:  
a propagation medium;  
a first transceiver including a plurality of available antennas;  
a second transceiver including  
a plurality of available antennas  
a processor operative to determine higher-order statistics of the propagation medium  
from signals received from the plurality of available antennas at the first transceiver; and  
an antenna selection module operative to select a subset of active antennas from the  
plurality of available antennas based on higher-order statistics of the propagation medium [The  
system of claim 36], where[in] the processor is operative to select a constellation for  
transmission on the active antennas and select different constellations for two or more of the  
active antennas.

38. (Currently Amended) The system of claim [34]37, where[in] the system  
comprises at least a portion of a multiple-in multiple-out (MIMO) device.

39. (Currently Amended) The system of claim [34,]37 where[in] the processor is  
operative to select the subset of active antennas based on correlation matrices among the active  
antennas.

40. (Currently Amended) A system comprising:  
a propagation medium;  
a first transceiver including a plurality of available antennas;  
a second transceiver including

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a plurality of available antennas  
a processor operative to determine higher-order statistics of the propagation medium  
from signals received from the plurality of available antennas at the first transceiver; and  
an antenna selection module operative to select a subset of active antennas from the  
plurality of available antennas based on higher-order statistics of the propagation medium,  
 \_\_\_\_\_ where[The system of claim 34,] the processor is operative to select an optimum number  
 of antennas to maximize a minimum signal-to-noise ratio (SNR) margin.

41. (Currently Amended) The system of claim [34,]37 where the processor is  
 operative to select the subset of active antennas based on a fixed data rate.

42. (Currently Amended) [The system of claim 34] A system comprising:  
a propagation medium;  
a first transceiver including a plurality of available antennas;  
a second transceiver including  
a plurality of available antennas  
a processor operative to determine higher-order statistics of the propagation medium  
from signals received from the plurality of available antennas at the first transceiver; and  
an antenna selection module operative to select a subset of active antennas from the  
plurality of available antennas based on higher-order statistics of a propagation medium,  
where the processor is operative to select a subset including  $M_T$  active transmit antennas  
 [by solving for] substantially in accordance with the equation

$$(M_T, p) = \arg \max_{(\tilde{M}_T, \tilde{p})} \frac{\lambda \min(R_T(\tilde{M}_T, \tilde{p}))}{\tilde{M}_T(2^{b_T/\tilde{M}_T} - 1)} \cdot \bar{\lambda}_{\min}(H_w^*(K_R, \tilde{M}_T)H_w(K_R, \tilde{M}_T)).$$



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43. (Currently Amended) The system of claim [34,] 37 where the processor is operative to allocate substantially equal power to each of said active antennas.

44. (Currently Amended) [The system of claim 34,] A system comprising:  
a propagation medium;  
a first transceiver including a plurality of available antennas;  
a second transceiver including  
a plurality of available antennas  
a processor operative to determine higher-order statistics of the propagation medium  
from signals received from the plurality of available antennas at the first transceiver; and  
an antenna selection module operative to select a subset of active antennas from the  
plurality of available antennas based on higher-order statistics of the propagation medium,  
where the processor is operative to select a subset including  $M_T$  active transmit antennas  
[by solving for] substantially in accordance with the equation

$$(M_T, p) = \arg \max_{(\tilde{M}_T, \tilde{p})} \left\{ \frac{1}{\tilde{M}_T} \left[ \ln \det(R_T(\tilde{M}_T, \tilde{p})) + \sum_{j=1}^{\tilde{M}_T} \sum_{i=1}^{K_R-j} \frac{1}{i} - b_T \ln 2 \right] - \ln \tilde{M}_T \right\}.$$

45. (Cancelled)

46. (Currently Amended) The computer program of claim [45] 48, wherein the higher-order statistics comprise second-order statistics of the propagation medium.

47. (Cancelled)

48. (Currently Amended) A computer program comprising the steps of:

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selecting a subset of active antennas from a plurality of available antennas in an multi-element antenna system based on higher-order statistics of a propagation medium; and

selecting a constellation for transmission on the active antennas including [The computer program of claim 47, wherein said selecting the constellation for transmission on the active antennas comprises] selecting different constellations for two or more of the active antennas.

49. (Currently Amended) The computer program of claim [45,]48 where[in] the multi-element antenna system comprises a multiple-in multiple-out (MIMO) system.

50. (Currently Amended) The computer program of claim [45,]48 where[in] said selecting comprises selecting the subset of active antennas based on correlation matrices among the active antennas.

51. (Currently Amended) A computer program comprising the steps of:  
selecting a subset of active antennas from a plurality of available antennas in an multi-element antenna system based on higher-order statistics of a propagation medium [The computer program of claim 45,] where[in] said selecting comprises selecting an optimum number of antennas to maximize a minimum signal-to-noise ratio (SNR) margin.

52. (Currently Amended) The computer program of claim [45,]48 where[in] said selecting comprises selecting the subset of active antennas based on a fixed data rate.

53. (Currently Amended) [The computer program of claim 45,] A computer program comprising the steps of:

selecting a subset of active antennas from a plurality of available antennas in an multi-element antenna system based on higher-order statistics of a propagation medium, wherein said

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selecting comprises determining a subset including  $M_T$  active transmit antennas [by solving for]  
substantially in accordance with the equation

$$(M_T, p) = \arg \max_{(\tilde{M}_T, \tilde{p})} \frac{\lambda \min(R_T(\tilde{M}_T, \tilde{p}))}{\tilde{M}_T(2^{b_r/\tilde{M}_T} - 1)} \cdot \bar{\lambda}_{\min}(H_w^*(K_R, \tilde{M}_T)H_w(K_R, \tilde{M}_T)).$$

54. (Currently Amended) The computer program of claim [45,]48 further comprising generating a signal operative to allocate substantially equal power to each of said active antennas.

55. (Currently Amended) [The computer program of claim 45,] A computer program comprising the steps of:

selecting a subset of active antennas from a plurality of available antennas in an multi-element antenna system based on higher-order statistics of a propagation medium, wherein said selecting comprises determining a subset including  $M_T$  active transmit antennas [by solving for]  
substantially in accordance with the equation

$$(M_T, p) = \arg \max_{(\tilde{M}_T, \tilde{p})} \left\{ \frac{1}{\tilde{M}_T} \left[ \ln \det(R_T(\tilde{M}_T, \tilde{p})) + \sum_{j=1}^{\tilde{M}_T} \sum_{i=1}^{K_R+j} \frac{1}{i} - b_r \ln 2 \right] - \ln \tilde{M}_T \right\}.$$

56. (New) The method of claim 37, wherein the higher-order statistics comprise second-order statistics of the propagation medium.

57. (New) The method of claim 40, wherein the higher-order statistics comprise second-order statistics of the propagation medium.

58. (New) The method of claim 42, wherein the higher-order statistics comprise second-order statistics of the propagation medium.

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59. (New) The method of claim 44, wherein the higher-order statistics comprise second-order statistics of the propagation medium.